CLAIMS

1. A method of manufacturing a cooling plate comprising:

providing a metallic plate body (10, 10', 10") with a front face (12, 12'), a rear face (14, 14') and at least one channel (22, 22') extending through said metallic plate body (10, 10', 10") beneath said front face (12, 12');

inserting, with radial clearance, a metallic tube (30, 30') into said channel (22, 22') so that both tube (30, 30') ends protrude out of said channel (22, 22'); and

achieving a press fit of said tube (30, 30') within said channel (22, 22');

characterized in that the step of achieving a press fit of said tube (30, 30') within said channel (22, 22') comprises a metal-forming process applied to said metallic plate body (10, 10', 10").

2. The method as claimed in claim 1, wherein said metal-forming process provides an elastic deformation of said tube (30, 30') so as to produce a pre-tensioned fit of said tube (30, 30') in said channel (22, 22').

3. The method as claimed in claim 1 or 2, wherein the step of providing a metallic plate body (10, 10', 10") with at least one channel (22, 22') comprises:

a) providing a forged or rolled copper or steel slab; and

b) drilling said at least one channel (22, 22') through said slab.

4. The method as claimed in claim 1 or 2, wherein the step of providing a metallic plate body (10, 10', 10") with at least one channel (22, 22') comprises:

continuously casting a metallic slab with at least one cast-in channel (22, 22') extending there through; and

manufacturing said metallic plate body (10, 10', 10") out of said continuously cast metallic slab.

5. The method as claimed in claim 4, wherein the step of manufacturing said

metallic plate body (10, 10', 10") comprises:

machining said at least one cast-in channel (22, 22') with a metal-cutting tool so as to improve its dimensional and form tolerances.

6. The method as claimed in any one of claims 1 to 5, wherein the step of achieving a press fit of said tube (30, 30') within said channel (22, 22') comprises a metal-forming process applied locally along said at least one channel (22, 22').

7. The method as claimed in claim 6, wherein a depression (90) is formed along said channel (22, 22') by means of said metal forming process.

8. The method as claimed in any one of claims 1 to 7, wherein the step of providing a metallic plate body (10, 10', 10") with at least one channel (22, 22') comprises:

providing a bulge (80) on said metallic plate body (10, 10', 10"), said bulge extending along said at least one channel (22, 22').

9. The method as claimed in claim 8, wherein the step of providing a metallic plate body (10, 10', 10") with at least one channel (22, 22') further comprises:

providing an aperture (82) within said bulge (80).

10. The method as claimed in claim 8, wherein the step of providing a metallic plate body (10, 10', 10") with at least one channel (22, 22') further comprises:

providing an aperture (82) within said bulge (80), wherein said aperture (82) extends into said at least one channel (22, 22').

11. The method as claimed in claim 10, wherein said metal-forming process is applied to said bulge (80) so as to reduce the width of said aperture (82).

12. The method as claimed in any one of claims 8 to 11, wherein said metal-forming process is applied to said bulge (80) so as to depress the latter.

13. The method as claimed in any one of claims 1 to 12, wherein the step of achieving a press fit of said tube (30, 30') within said channel (22, 22') com-

prises:

rolling down said plate body (10, 10', 10") after insertion of said metallic tube (30, 30') in said channel (22, 22').

14. The method as claimed in claim 13, wherein said plate body (10, 10', 10") is rolled down so as to confer an oval section to said channel (22, 22') and said tube (30, 30').

15. The method as claimed in any one of claims 1 to 14, wherein the step of achieving a press fit of said tube (30, 30') within said channel (22, 22') further comprises:

radially expanding said tube (30, 30') by establishing a hydraulic pressure inside said tube (30, 30').

16. The method as claimed in any one of claims 1 to 15, wherein the step of achieving a press fit of said tube (30, 30') within said channel (22, 22') further comprises:

radially expanding said tube (30, 30') with at least one explosion inside.

17. The method as claimed in any one of claims 1 to 16, wherein the step of achieving a press fit of said tube (30, 30') within said channel (22, 22') further comprises:

expanding said tube (30, 30') by pulling an expansion head there through.

18. The method as claimed in any one of claims 1 to 17, wherein said plate body (10, 10', 10") is made of copper or steel.

19. The method as claimed in claim 1 to 18, wherein said tube (30, 30') is made of copper or stainless steel.

20. The method as claimed in any one of claims 1 to 19, wherein:

each of said tube (30, 30') ends protruding out of said channel (22, 22') is bent towards the rear of the plate body (10, 10', 10"), so as to form a connection pipe-end pointing in a direction substantially perpendicular to a plane parallel to the rear face (14, 14') of the plate body (10, 10', 10").

21. The method as claimed in any one of claims 1 to 20, wherein the step of

providing a metallic plate body (10, 10', 10") comprises:

providing a plate body (10, 10', 10") with a first perimeter face (16, 16') and an opposite second perimeter face (18, 18'), wherein said at least one channel (22, 22') extends through said metallic plate body (10, 10', 10") so as to form a first opening (24, 24') in said first perimeter face (16, 16') and a second opening (26, 26') in said second perimeter face (18, 18').

22. The method as claimed in claim 21, wherein at least one of said perimeter faces (16, 18) is bevelled towards the rear face (14) of said plate body (10).

23. The method as claimed in claim 21, wherein for at least one of said openings (24', 26'), a recess (70, 72) is milled into said perimeter face (16', 18'), so that said recess is open towards the rear face (14') of the plate body (10'), and so that said opening (24', 26') lies within said recess (70, 72).

24. A cooling plate comprising a metallic plate body (10, 10', 10") with a front face (12, 12'), a rear face (14, 14') and at least one metallic tube (30, 30') extending through a channel (22, 22') in said metallic plate body (10, 10', 10") beneath said front face (12, 12') so that both tube (30, 30') ends protrude out of said plate body (10, 10', 10"), with a press fit between said metallic plate body (10, 10', 10") and said at least one metallic tube (30, 30'),

characterized by a plastic deformation of said metallic plate body (10, 10', 10") along said channel (22, 22'), said plastic deformation providing a predominant contribution to said press fit.

25. The cooling plate as claimed in claim 24, wherein said plate body (10, 10', 10") initially comprises a bulge (80) extending along said at least one channel (22, 22').

26. The cooling plate as claimed in claim 25, wherein an aperture (82) is provided in said bulge (80).

27. The cooling plate as claimed in claim 26, wherein, after plastic deformation of said plate body (10, 10', 10") and more specifically said bulge (80), a slit is provided along said at least one channel (22, 22'), said slit originating from said aperture (82).

28. The cooling plate as claimed in any one of claims 24 to 27, wherein said plate body (10, 10', 10") is made of copper or steel.

29. The cooling plate as claimed in any one of claims 24 to 28, wherein said tube (30, 30') is made of copper or stainless steel.

30. The cooling plate as claimed in claim 29, wherein said plate body (10, 10', 10") is made of steel and said tube (30, 30') is made of copper.

31. The cooling plate as claimed in any one of claims 24 to 30, wherein:

each of said tube (30, 30') ends is bent so as to form a connection pipe-end (60, 62, 60', 62') pointing in a direction substantially perpendicular to a plane parallel to the rear face (14, 14') of the plate body (10, 10', 10").

32. The cooling plate as claimed in any one of claims 24 to 31, wherein:

said plate body (10, 10', 10") has a first perimeter face (16, 16') and a second perimeter face (18, 18'); and

said at least one tube (30, 30') extends through said metallic plate body (10, 10', 10") so that one tube (30, 30') end emerges out of said first perimeter face (16, 16') and the other tube (30, 30') end emerges out of said second perimeter face (18', 18').

33. The cooling plate as claimed in claim 32, wherein at least one of said perimeter faces (16, 18) is bevelled towards the rear face (14) of said plate body (10).

34. The cooling plate as claimed in claim 32, wherein at least one of said perimeter faces (16', 18') includes a recess (70, 72) that is open towards said rear face (14') of said plate body (10') and in which said tube (30') end emerges out of said plate body (10').